

**OUTSTANDING HEALTHCARE REQUIRES
OUTSTANDING PACKAGING**



RELIABLE PROTECTION IS OUR RESPONSIBILITY





TODAY'S MODERN HEALTHCARE places high demands on medical packaging.

Demands that drive the development of safer, more flexible and more reliable packaging. And quite rightly so. After all, it is a question of people's lives and health.

As a supplier of high-quality kraft paper for medical packaging, Billerud plays an active role in developments in this field. With genuine know-how and in close collaboration with our customers, we will exceed the healthcare sector's requirements and the properties it demands.

Welcome to Billerud – a reliable partner in the healthcare of the future.

QUALITY IS OUR FOUNDATION FOR THE FUTURE

We at Billerud make high demands on our activities. This is why we can promise our customers that our products meet the highest standards and that the service we offer is among the best in the market.

Billerud makes high demands on quality – from raw material to finished product.

The raw material consists solely of strong, pure primary fibres, which gives our paper excellent basic characteristics. With the help of advanced high-tech equipment, we carry out continuous control throughout the manufacturing process to ensure consistent and high product quality. Our quality guarantee includes full traceability throughout the manufacturing stage.

ONE STEP AHEAD

The world around us is changing at breakneck speed and previous accomplishments are becoming valued less and less. To meet the future demand for medical packaging, we are carrying out dynamic research and development in laboratories at two of Billerud's mills: Beetham in the UK and Skärblacka in Sweden. We are continuously developing our

products with the help of modern technology and in close collaboration with our customers. This is resulting in new solutions that offer the market, and above all our customers, new levels of functionality. Our goal is always to be one step ahead. Today, we have a broad range of medical packaging materials, adapted to different fields of application and with different product-critical properties.

WE KEEP OUR PROMISES

Billerud has a high delivery capacity. At short notice, we can deliver medical packaging paper all over the world, without jeopardising product safety and quality. We can also assist our partners in developing an optimised paper based on their own production process, which increases both their rate of production and their cost-effectiveness. If our customers have a specific requirement, we can tailor-make paper qualities that are best suited to just that customer's fields of application.



A FOUNDER MEMBER OF THE STERILE BARRIER ASSOCIATION

Billerud is a founder member of the Sterile Barrier Association, which creates a supportive and informative environment for technology innovations, product safety and manufacturing excellence in the industry.





MANUFACTURING ASSURANCE

Our activities are subject to rigorous hygiene control throughout the manufacturing process. With ISO 9001 quality certification and the ISO 14001 environmental certificate, we guarantee our customers products of the highest quality, produced with minimal impact on surrounding areas.



OUR OFFER ENABLES CUSTOMERS TO FOCUS ON THEIR CORE BUSINESS

Billerud produces a world-class MG kraft paper. This paper forms the basis of our two product families Billerud Sterikraft® and Billerud Medikraft®. Together, they cover the healthcare sector's medical packaging paper requirements.

BILLERUD STERIKRAFT®

Sterilisation requires a material that breathes and allows the sterilisation medium to pass through. With this as our starting point, we have developed Sterikraft in a number of different versions. With high permeability and an effective microbial barrier, Sterikraft offers effective protection of all sterilised products. Sterikraft is able to withstand the different sterilisation methods the paper is exposed to and guarantees the sterility of the products right up until the time they are used. Sterikraft papers meet EN 868 and ISO 11607 standards.

BILLERUD MEDIKRAFT®

Where ISO 11607 standards are not required Billerud has developed a series of Medikraft medical papers for applications that do not require microbial barrier properties, but need to have good printability and excellent run-

ability. Applications for these papers include the inner wrapping of single-use gloves, some dressings and other medical articles, where the industry needs a packaging paper that guarantees cleanliness and strength.

ADAPTED TO TOMORROW'S DEMANDS

The demands on packaging paper vary according to the field of application. Sterikraft and Medikraft complement each other. Medikraft is used primarily for the packaging of single-use articles such as plasters, topical dressings and the inner wrapping of surgical gloves. Sterikraft offers excellent packaging paper characteristics in combination with microbial barrier properties, for both sterilised medical instruments and single-use articles. Both our product series are available in several grammages.



FOR ALL STERILISATION

Billerud SteriKraft consists of a wide range of first-class barrier papers developed for all sterilisation methods used in modern health care. Autoclaving, gas or gamma irradiation – we have papers for all the processes and we help our customers to find the right quality.



ACTIVE LIFE

Billeruds' microbial barrier papers maintain their protective requirements as outlined in ISO 11607-1, for a period of 5 years from the date of manufacture.



VALUE AND PERFORMANCE FOR DEMANDING MARKETS

Packaging materials for the healthcare sector must satisfy high demands, and there are many challenges. Challenges that we at Billerud are more than willing to take on.

CLEANLINESS AND STRENGTH

A paper used for medical packaging must be free of dirt and contamination. Billerud's kraft paper consists of 100 per cent primary fibre, carefully selected from slow-growing Scandinavian forests. This results in paper with superior cleanliness and strength. No hazardous substances are used in the production process and all additives are approved by REACH, the European Community Regulation on chemicals and their safe use. We rigorously control the cleanliness of fibres, machines and end products.

EXCELLENT RUNABILITY

The paper's properties are very important when it comes to guaranteeing good runability. All our medical kraft papers are one side glazed, MG papers. This is the result of a special drying process that provides a strong paper with one very smooth and glossy side. These are perfect characteristics for excellent printability and runability in modern high-speed converting machines. Additional enhancement is achieved through the latest soft calendaring technique.

STERILITY

Infection control is a high priority in today's modern healthcare sector. It is therefore crucial that medical papers can withstand all the stress and strain that modern sterilisation methods expose them to, as well as preventing bacteria passing through the paper or contaminating the product during opening. During autoclaving, the paper must be able to withstand high pressure steam at temperatures up to 134 °C without disintegrating; equally at room temperature the paper must be water repellent.

The transition to single-use articles has helped to raise the hygiene standard in healthcare. For practical and economic reasons, these products are sterilised in conjunction with their manufacture and packaging so that they can be used directly without any local processing. Here, of course, high demands are also made on the packaging material's strength, cleanliness and microbial barrier. Billerud's paper is adapted to satisfy all these demands and all common sterilisation methods.



COST EFFICIENCY

A paper with excellent runability and printability, together with a strong seal and a completely clean peel, is one of the most cost-effective investments in today's modern healthcare.

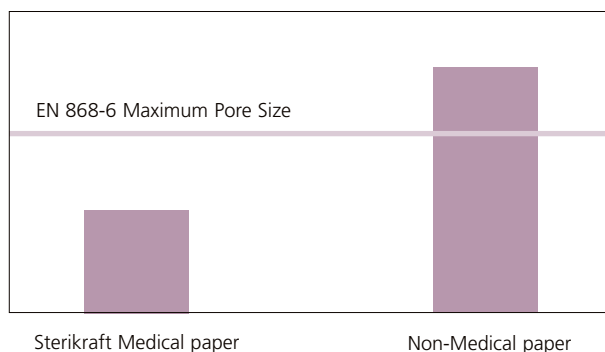
MICROBIAL BARRIERS AND PERMEABILITY

Billerud's medical papers have small and even pores that provide a controlled permeability. This enables the sterilisation medium to pass through the paper and sterilise the products. In order to prevent bacteria from passing through, our Sterikraft series incorporates a highly effective microbial barrier that stops the bacteria.

STRONG SEAL AND CLEAN PEEL

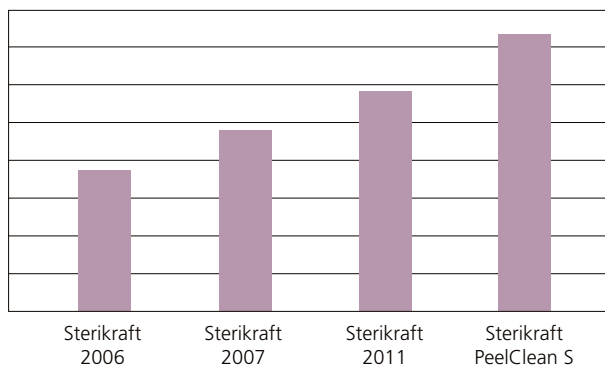
One of the largest challenges facing the medical packaging industry is a high performance sealing of the products. The seal must be secure and remain intact until the pack is opened. The seals must not break, either when autoclaving or in industrial use – the sterility must always be maintained. That is why Billerud's papers are carefully designed and manufactured to provide a fibre-free peel. This ensures the article's cleanliness at the point of use.

PORE SIZE – A COMPARISON



The pore size of the Sterikraft series fully lives up to the standards of EN 868:6.

SEAL STRENGTH



Paper/film heat seal strength results over four generations of medical papers.

A RELIABLE AND NECESSARY BASE OF THE VALUE CHAIN

Effective and functional materials for the medical packaging market. Safe and hygienic products for healthcare. Our papers form the necessary basis of several products. With the customer's best interest in mind, Billerud provides a quality base for the whole chain.

The patient seldom thinks about it – the packaging that protects is just there, which is just as it should be. The patient doesn't need to think about whether the packaging is hygienic, or whether the medical instruments are sterilised in a safe and effective way. But the industry and the healthcare sector do.

FROM PAPER TO FINISHED PRODUCT

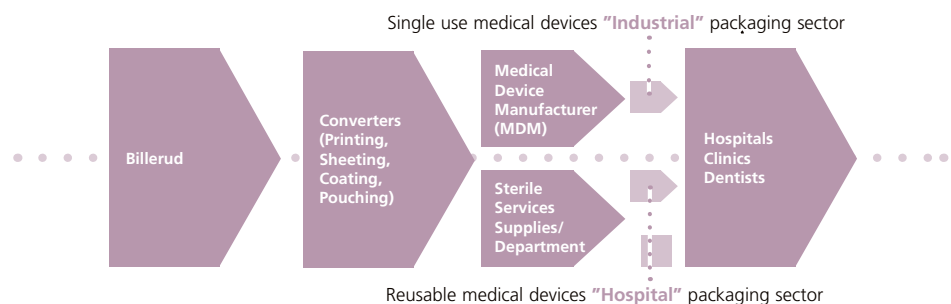
The medical packaging market is important for Billerud and we are working actively to develop close collaboration with partners and other important players throughout the value chain. We are doing this by investing in high-technology services, support and close customer relations.

PAPER FOR INDUSTRY

Billerud supplies several fields of activity in the healthcare sector with medical paper. Producers of medical products often purchase our papers directly from us and use them in their industrial packaging process. We also provide converters with paper, who then convert it into a range of packaging for a producer. The production processes vary but thanks to a broad range of Sterikraft and Medikraft papers, we can offer the optimum alternative, which is compatible with each process and product. We offer papers that are adapted to the industrial market segment's sterilisation methods, such as ethylene oxide gas and gamma irradiation. These papers have been developed to provide packs with a strong seal and a clean fibre-free opening.

PAPER FOR HOSPITALS

Paper for healthcare facilities such as hospitals, surgeries and dental clinics is another growing market for Billerud. We manufacture paper for the pouches and bags used when autoclaving reusable medical instruments. Billerud is also a large producer of creped wrapping materials for the healthcare sector. We know that with increased usage of microbial barrier paper and reduced consumption of reusable textile materials, the risk of transmitting infection is minimised at the same time as good hospital hygiene is ensured.





**FROM BILLERUD
TO END USER**

Billerud is a reliable base of the medical packaging value chain. We offer outstanding service and support so that our customers are provided with optimum products adapted to their production and their prerequisites.



APPLICATION GUIDE

"INDUSTRIAL" SINGLE USE DEVICES – EO/GAMMA IRRADIATION

Application	Product	Basis weight	Certification	Mill
Direct seal top web	SteriKraft Lite	55	ISO 11607:1 & EN 868:6	Skärblacka
Direct seal top web	SteriKraft D	60, 70, 80	ISO 11607:1 & EN 868:6	Skärblacka
Direct seal top web	SteriKraft G	60, 70	ISO 11607:1 & EN 868:6	Skärblacka
Direct seal top web	SteriKraft Peelclean EO	60, 70	ISO 11607:1 & EN 868:6	Beetham
Direct seal top web	SteriKraft Peelclean EO-R	60, 70	ISO 11607:1 & EN 868:6	Beetham
Direct seal top web (Reinforced)	SteriKraft Protect EO	80, 100	ISO 11607:1 & EN 868:6	Beetham
Grid lacquer heat seal coating	SteriKraft CPS	60, 70	ISO 11607:1 & EN 868:6	Beetham
Heat & cold seal coating	SteriKraft S Cal	60, 70	ISO 11607:1 & EN 868:6	Skärblacka
Cold seal coating	MediKraft	40, 45, 50	n/a	Skärblacka
PE Extrusion coating & Surgical glove wrap	MediKraft	40, 45, 50	n/a	Skärblacka
PE Extrusion coating & Surgical glove wrap	MediKraft Light	30, 35, 40	n/a	Skärblacka

"HOSPITAL" REUSABLE DEVICES – STEAM STERILISATION

Application	Product	Basis weight	Certification	Mill
Film fronted pouches & rollstock	SteriKraft S	60, 70	ISO 11607:1 & EN 868:3	Skärblacka
Film fronted pouches & rollstock	SteriKraft 2011	60, 68	ISO 11607:1 & EN 868:3	Beetham
Film fronted pouches & rollstock	SteriKraft Peelclean S	62, 68	ISO 11607:1 & EN 868:3	Beetham
Heat seal bags	SteriKraft S	60, 70	ISO 11607:1 & EN 868:3	Skärblacka
Creped sterilisation wrap (Reinforced)	Supadrape	60	ISO 11607:1 & EN 868:2	Beetham
Creped sterilisation wrap	Supawrap	60	ISO 11607:1 & EN 868:2	Beetham
Creped sterilisation wrap	Steriwrap	60	ISO 11607:1 & EN 868:2	Beetham



TAILOR-MADE SOLUTIONS

Billerud believes in good customer relations. For our partners' efficiency, we can tailor paper and solutions to meet the needs of each individual customer. We help to increase profitability.

Key features:

Low basis weight, high strength paper, offering greater cost efficiency for lightweight products

Higher seal strength version of Sterikraft G

Industry standard functionality for high volume single use medical devices

High seal strength combined with excellent clean peel

Very high seal strength combined with clean peel. Compatible with a large range of films

Reinforced strength properties providing high puncture resistance and clean peel characteristics

High coating efficiency with excellent lacquer transfer and clean peel properties

High strength medical paper, calendered for enhanced coating efficiency

High cleanliness MG kraft paper

High cleanliness MG kraft paper

Lightweight high cleanliness MG kraft paper

Key features:

Porosity

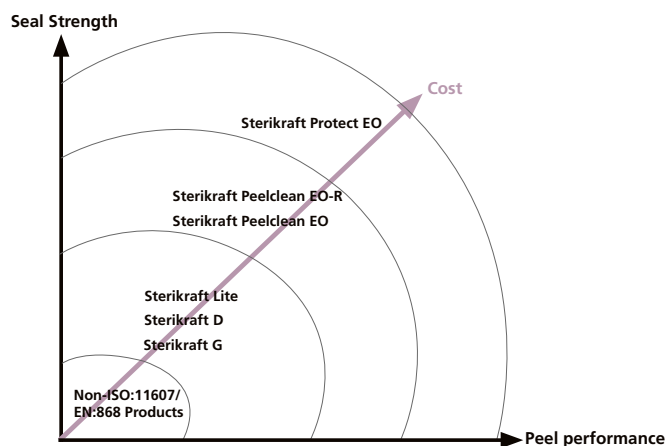
500ml/min	Optimised medical paper for the steam sterilisation process
630ml/min	High seal strength balanced with a good permeability
800ml/min	High permeability combined with fast high-strength seal development
500ml/min	Optimised medical paper for the steam sterilisation process

Colours: Blue, Green Reinforced high performance crepe, with IPA repellency

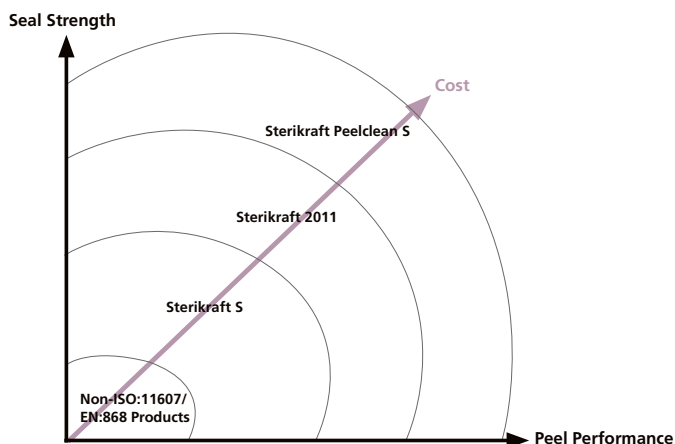
Colours: Blue, Green, White Enhanced softness high water repellency wrapping crepe

Colours: Green, White High water repellency wrapping crepe & plain paper

DIRECT SEAL TOP WEB PRODUCTS



FILM FRONTED POUCHES & ROLLSTOCK PRODUCTS



WE MAKE YOUR PACKAGING BETTER

We at Billerud contribute in several ways towards better packaging and cost efficiency. With us as a supplier, our customers can rest assured that their production will be both reliable and problem-free.

For us at Billerud, a high level of availability is a matter of course. Our customers should feel that in us they have a reliable partner whose products, solutions and services result in higher productivity and overall value. We help in several different ways.

SEAL LAB – AT YOUR SERVICE

Seal Lab is Billerud's development centre for medical packaging solutions that helps our customers to make their production more efficient. With unique know-how and adaptable equipment, Seal Lab can simulate sealing properties in most machines on the market. Seal Lab's analyses show that the choice of paper and film is crucial for an effective sealing process. With the right choice, it is possible to increase the speed of the sealing process by as much as 30 per cent.

KNOWLEDGABLE TECHNICAL SUPPORT

We believe that our papers should always be associated with substantial added value and that they function optimally in our customers' processes. To ensure high production reliability, we provide manufacturers all over the world with professional technical support. We carry out trials, solve problems and give product-engineering advice. Naturally, our technical services are adapted to each customer's equipment, prerequisites and products.

THE RIGHT PAPER FOR EVERY PRODUCT

With long experience of paper production and in-depth knowledge of paper, we help our customers to make the right choice of paper and film for each product. Our recommendations are always adapted to our customers' wishes and requirements.





BILLERUD AB, Box 703, SE-169 27 Solna, Sweden. Tel: +46 8 553 335 00 www.billerud.com

MILLS

BILLERUD BEETHAM

Milnthorpe
Cumbria LA77AR
England
Tel: +44 15395 650 00

BILLERUD GRUVÖN

Storjohanns väg 4
SE-664 28 Grums
Tel: +46 555 410 00

BILLERUD KARLSBORG

SE-952 83 Karlsborgsverken
Tel: +46 923 660 00

BILLERUD SKÄRBLACKA

SE-617 10 Skärblacka
Tel: +46 11 24 53 00

SALES OFFICES, EUROPE

England

BILLERUD SALES LTD.
Tel: +44 115 822 9950
salesoffice.nottingham@billerud.com

France

BILLERUD FRANCE S.A.S.
Tel: +33 1 44 69 94 40
salesoffice.paris@billerud.com

Germany

BILLERUD GMBH
Tel: +49 40 320 160
salesoffice.hamburg@billerud.com

Italy

BILLERUD S.R.L.
Tel: +39 02 248 390 85
salesoffice.milano@billerud.com

Netherlands

BILLERUD BENELUX B.V.
Tel: +31 251 788 130
salesoffice.benelux@billerud.com

Spain

BILLERUD IBÉRICA S.L.
Tel: +34 93 470 05 56
salesoffice.barcelona@billerud.com

Scandinavian markets

BILLERUD SCANDINAVIA
Tel: +46 8 553 337 00
salesoffice.scandinavia@billerud.com

SALES OFFICES, OUTSIDE EUROPE

China

BILLERUD TRADING (SHANGHAI) CO. LTD
Tel: +86 21 535 106 22
salesoffice.shanghai@billerud.com

Indonesia

BILLERUD ASIA PACIFIC
Tel: +62 21 5299 4439
salesoffice.jakarta@billerud.com

United Arab Emirates

BILLERUD GULF
Tel: +971 4 88 14 663
salesoffice.gulf@billerud.com

Other markets

BILLERUD INTERNATIONAL
Tel: +46 8 553 336 00
salesoffice.international@billerud.com